

Amendments to the Claims:

This listing of claims will replace all prior versions, and
listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended). An IGBT with a monolithically integrated antiparallel diode, comprising:

a semiconductor substrate forming an inner zone and having a front side, a rear side, and a peripheral high-voltage edge;

said front side of said semiconductor substrate having semiconductor wells of a first conductivity type formed therein with transistor cells within said peripheral high-voltage edge;

at least one emitter region of the first conductivity type formed at said rear side of said semiconductor substrate;

at least one emitter short region of a second conductivity type integrated substantially only in a region of said high-voltage edge, said at least one emitter short region lying in a plane with said at least one emitter region and forming an electrode of the antiparallel diode;

said at least one emitter region having no emitter short regions within said high-voltage edge; and

said emitter region having a thickness of less than 1
micrometer and a doping with a dose of between $1 \cdot 10^{12}$ and $1 \cdot$
 10^{15} charge carriers per cm^2 ; and

said semiconductor wells on said front side of said
semiconductor substrate forming a counterelectrode of the
antiparallel diode.

Claim 2 (original). The IGBT according to claim 1, wherein
said semiconductor wells at least predominantly contain
transistor cells.

Claim 3 (original). The IGBT according to claim 1, wherein
said at least one emitter short region reaches as far as a
chip end in edge regions of the IGBT.

Claim 4 (original). The IGBT according to claim 1, wherein
edge regions of the IGBT contain one or more emitter regions
at said high-voltage edge.

Claim 5 (withdrawn). The IGBT according to claim 1, wherein
said at least one emitter short regions is one of a plurality
of emitter short regions.

Claim 6 (withdrawn). The IGBT according to claim 5, wherein
said at least one emitter region is integrated in contiguous

fashion, and said emitter short regions are integrated in insular fashion.

Claim 7 (withdrawn). The IGBT according to claim 6, wherein said emitter short regions are integrated strip-shaped emitter short regions.

Claim 8 (withdrawn). The IGBT according to claim 7, wherein said strip-shaped emitter short regions extend obliquely with respect to said high-voltage edge.

Claim 9 (withdrawn). The IGBT according to claim 7, wherein said emitter short regions are integrated annular strips.

Claim 10 (withdrawn). The IGBT according to claim 6, wherein said emitter short regions are integrated punctiform regions.

Claim 11 (withdrawn). The IGBT according to claim 10, wherein said emitter short regions form a ring of punctiform islands below said high-voltage edge.

Claim 12 (withdrawn). The IGBT according to claim 1, wherein said at least one emitter short region is integrated without alignment with respect to said transistor cells.

Claim 13 (canceled).

Claim 14 (currently amended). The IGBT according to claim-~~13~~
1, wherein a lifetime of minority charge carriers in said
semiconductor substrate is at least 10 μ s.

Claim 15 (currently amended). The IGBT according to claim-~~13~~
1, wherein a thickness of said inner zone formed by said
substrate is less than 200 μ m.

Claim 16 (currently amended). The IGBT according to claim-~~13~~
1, which comprises a field stop region of the second
conductivity type integrated between a first region including
said substrate ~~on the one hand~~ and a first region including
said emitter region and emitter short region ~~on the other~~
hand.

Claim 17 (currently amended). The IGBT according to claim-~~13~~
1, wherein said substrate forming said inner zone is weakly
doped, and said emitter region is heavily doped with a
significantly higher doping concentration than said inner
zone.

Claim 18 (currently amended). The IGBT according to claim~~13~~
1, wherein said at least one emitter region is annealed at a
temperature of less than 600°C.

Claim 19 (currently amended). The IGBT according to claim~~13~~
1, wherein the first conductivity type is the p-conductivity
type and the second conductivity type is the n-conductivity
type.

Claim 20 (withdrawn). An IGBT with a monolithically
integrated antiparallel diode, comprising:

a semiconductor substrate forming an inner zone and having a
front side, a rear side, and a peripheral high-voltage edge;

said front side of said semiconductor substrate having
semiconductor wells of a first conductivity type formed
therein with transistor cells within said peripheral high-
voltage edge;

at least one emitter region of the first conductivity type
formed at said rear side of said semiconductor substrate;

at least one emitter short region of a second conductivity
type integrated substantially in a region of said high-voltage
edge, said at least one emitter short region lying in a plane

with said at least one emitter region, forming an electrode of the antiparallel diode, and running obliquely with respect to said high-voltage edge; and

said at least one emitter region having no emitter short regions within said high-voltage edge; and

said semiconductor wells on said front side of said semiconductor substrate forming a counterelectrode of the antiparallel diode.